Objectives: Readmission following vascular surgery intervention is frequent, costly, and often considered preventable. Vascular surgery outcomes have recently been scrutinized by Medicare, given high rates of readmission. We determine patient and clinical characteristics that predict readmission in a cohort of vascular surgery patients.

Methods: From 2009 to 2013, the medical records of all patients (n = 2505) undergoing interventions by the vascular surgery service at a single tertiary care institution were retrospectively reviewed. Sociodemographic and clinical characteristics were examined for association with 30-day readmission.

Results: The 30-day readmission rate to the same institution was 9.7% (n = 244). Procedures most likely to result in readmission were below-knee (25%), foot (22%), and toe amputations (19%), as well as lower extremity revisions (22%). Patients covered by Medicaid (16.8%) and Medicare (10.0%) were most likely to be readmitted followed by fee-for-service (9.5%), self-pay (8.0%), and health maintenance organization (5.5%; $P < .05$). Patients urgently admitted were more likely to be readmitted (16.2%) than electively admitted patients (9.1%; $P < .01$). Patient severity (rated using 3M APR DRG software) predicted readmission (16.2% high vs 6.2% low severity; $P < .01$). Initial length of stay was longer for readmitted than nonreadmitted patients (8.5 vs 6.1 days, respectively; $P < .01$). Intensive care unit admission during initial hospitalization was moderately associated with higher readmission rates (18.3% with vs 9.5% without intensive care unit stay; $P < .05$). Discharge destination was also a strong predictor of readmission (rehabilitation, 19.2%; skilled nursing facility, 16.2% vs home, 6.2%; $P < .01$). The effects of urgent admission, illness severity, length of stay, and discharge destination persisted in multivariable logistic regression.

Conclusions: To reduce readmission rates effectively, institutions must identify high-risk patients. Efforts should focus on subgroups undergoing selected interventions (amputations, vascular revisions), as well as urgent admissions and those with extended hospital stays. Patients in need of postacute care upon discharge are especially prone to readmission, requiring special attention to discharge planning and coordination of post-discharge care.

Combined Carotid Endarterectomy and Coronary Artery Bypass Grafting: Which Is Better, Simultaneous or Staged Approach?

Mustafa Baldawi, Stephen Stanek, Weikai Qu, Hammad Amer, Jihad Abbas, Munier Nazzal. Department of Surgery, University of Toledo Medical Center, Toledo, Ohio

Objectives: To compare the morbidities, mortality, length of stay, and total cost between simultaneous and staged carotid endarterectomy (CEA) and coronary artery bypass grafting (CABG).

Methods: Utilizing the Nationwide Inpatient Sample (NIS), we studied all the patients that underwent CEA and CABG between 2008 and 2010. International Classification of Disease, Ninth Revision codes were used to look for procedure types, comorbidities, and complications. Data analysis was done using SPSS v.19 (IBM, Armonk, NY); statistical significance was defined as $P < .05$.

Results: Both CEA and CABG (CEA/CABG) was done in 8568 patients. CEA/CABG group was categorized into Simultaneous CEA/CABG (SmCC; same day; 4534 [52.9%]), and Staged CEA/CABG (StCC; different days, same admission; 2209 [25.8%]); 1825 (21.3%) patients were excluded (deficient coding). When SmCC was compared with StCC, Length of stay (LOS) and total charges were significantly higher in StCC; however, no significant difference was found in mortality, in-hospital myocardial infarction, or postoperative stroke. After adjustment for comorbidities (hypertension, diabetes mellitus, congestive heart failure, smoking and peripheral vascular disease), comparison of SmCC and StCC yielded comparable results for LOS and total charges, but no significant differences in mortality, in-hospital myocardial infarction, and postoperative stroke between SmCC and StCC (Table).

Conclusions: In patients with combined CEA/CABG, simultaneous surgery carries lower charges, LOS, mortality and stroke rate as compared with staged procedures in the same admission.

Effect of Plavix on Limb Salvage Following Endovascular Lower Extremity Revascularization

Mark L. Janzen, Viktor Y. Dombrovskiy, Edgar L. Galiñanes, Todd R. Vogel. University of Missouri Hospitals and Clinics, Columbia, Mo

Objectives: This study evaluated amputation-free-survival in patients identified utilizing Plavix (Clopidogrel) following their lower extremity endovascular revascularization (LER).

Methods: Patients 65 years of age and greater undergoing LER were identified from MedPAR files (2007 to 2008) utilizing International Classification of Disease, Ninth Revision codes. Demographics, comorbidities, and severity of disease (claudication, rest pain, ulceration/gangrene [UG]) are evaluated. Postprocedural use of Plavix was identified using the National Drug Code directory and Part D files. Outcomes were measured using χ^2 analysis, multivariable logistic regression, Kaplan-Meier, and Cox regression.

Results: A total of 14,353 patients were identified: 7189 with claudication (50.1%), 1467 with rest pain (10.2%), 5697 with UG (39.7%). Of these, 5416 (37.7%) patients were identified using Plavix after LER. Overall, patients initiated on Plavix had lower amputation rates at 30 days (10.34% vs 14.09%; $P < .0001$), 90 days (14.05% vs 18.71%; $P < .0001$), and 1 year (19.68% vs 24.06%; $P < .0001$). Multivariate logistic regression analysis adjusted by age, gender, race, and comorbidities confirmed that non-Plavix users were more likely to undergo amputation at 30 days (odds ratio [OR], 1.28; 95% confidence interval [CI], 1.14-1.43), 90 days (OR, 1.29; 95% CI, 1.16-1.43), and 1 year (OR, 1.16; 95% CI, 1.05-1.28). Males, blacks, congestive heart failure, diabetes, and renal failure were significant predictors of amputation. In χ^2, logistic regression, and Cox regression analyses, Plavix did not significantly affect amputation rates in patients with claudication or rest pain. Patients with UG who did not receive Plavix were significantly more likely to undergo amputation at 30 days (OR, 1.29; 95% CI, 1.14-1.45), 90 days (OR, 1.28; 95% CI, 1.15-1.43), and 365 days (OR, 1.19; 95% CI, 1.07-1.31).

Conclusions: Utilization of Plavix after LE endovascular revascularization was associated with lower rates of amputation, yet only 38% of the Medicare population was identified as using Plavix after intervention. Patients with UG benefited the greatest with significantly greater amputation-free survival and overall survival. Prospective randomized trials are needed to assess the suggested benefits of Plavix on amputation-free survival after LE endovascular revascularization.

Table. Adjusted and nonadjusted comparison of simultaneous and staged carotid endarterectomy (CEA) and coronary artery bypass grafting (CABG)

	Nonadjusted			*Adjusted*			
	Simultaneous	*Staged*	P	*Odds ratio*	P	*95% confidence interval*	
No.	4534	2209					
LOS, days (median)	9	13	<.01	0.182[a]	<.01	3.178	3.965
Total cost, USD (median)	124,544	171,094	<.01	0.070[a]	<.01	14641	24291
Mortality	181/4%	98/4%	.390	0.943	.671	0.720	1.236
Myocardial infarction	1099/24%	558/25%	.366	0.994	.924	0.880	1.123
Stroke	90/2%	49/2%	.528	0.878	.478	0.613	1.258

LOS, Length of stay.
[a]Standardized coefficient.